

Supplemental Online Content

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This supplemental material has been provided by the authors to give readers additional information about their work.

eTable 1. Common Data Elements Across GCS NeuroCOVID and ENERGY Registry CRF

Variable	ENERGY Registry	GCS NeuroCOVID Cohorts
Center ID	X	X
Patient's code	X	X
Site of visit	X	X
Reason for neuro assessment	X	
Date of registration	X	X
Medical record #	X	X
Year of birth	X	X
Sex	X	X
Height	X	X
Weight	X	X
Smoking	X	X
Source of contact	X	
Date of symptom onset	X	X
Final COVID status	X	X
Comorbidities		
Arterial hypertension	X	X
Diabetes	X	X
Cardiovascular disease	X	X
Chronic kidney disease	X	
Chronic liver disease	X	
Chronic pulmonary disease	X	X
Anemia	X	
Cancer	X	X
Immunosuppressed state	X	X
Other non-neuro comorbidities	X	
Neuro comorbidities	X	X
Premorbid mRS	X	
Complications		
Dyspnea	X	
Pneumonia	X	X
Cardiovascular disease	X	X
Renal insufficiency/dialysis	X	X
Coagulation disease/DIC	X	
Refractory shock	X	X
ECMO	X	X
Hospital admission	X	X
ICU admission	X	X
Mechanical ventilation	X	X
Neurological Findings		
Headache	X	X

Hyposmia/hypogeusia	x	x
Dysautonomia	x	x
Vertigo	x	
Myalgia	x	
Myelopathy	x	x
Sleep disturbances	x	
Sleepiness/hypersomnia	x	
Cognitive impairment	x	
Dysexecutive syndrome	x	
Hyperactive delirium	x	x
Hypoactive delirium/acute encephalopathy	x	x
Stupor/coma	x	x
Syncope	x	x
Seizures/status epilepticus	x	x
Meningitis/encephalitis	x	x
Stroke	x	x
Sensory Abnormalities	x	x
Movement disorder/abnormalities	x	x
Ataxia	x	
Spinal cord disorder	x	x
Peripheral neuropathy	x	
Plegia/Paralysis		x
Abnormal brain stem reflexes	x	x
Aphasia	x	x
Abnormal tone	x	x
Investigations and Outcomes		
CSF	x	x
CT/MRI	x	x
Status at discharge	x	x
mRS at discharge	x	x
Date of death	x	x

eTable 2. Characteristics Associated With In-Hospital Death, Adjusted for Study Center, Age, Sex, Race, Ethnicity, and Body Mass Index for GCS-NeuroCOVID All COVID-19 Cohort

Covariate	Unadjusted		^a Adjusted	
	OR [95%CI]	p-value	aOR [95%CI]	p-value
Baseline Characteristics				
Age (per 10 yr)	1.71 [1.59 – 1.84]	<0.001	1.80 [1.65 – 1.96]	<0.001
Male Sex	1.45 [1.17 – 1.80]	<0.001	1.70 [1.33 – 2.18]	<0.001
Body Mass Index (BMI)	1.0 [0.98 – 1.01]	NS	1.01 [1.00 – 1.03]	0.030
Race	..	<0.001	..	0.040
White	1	..	1	..
Asian	0.41 [0.21 – 0.79]	0.0076	0.39 [0.19 – 0.80]	0.01
African American	0.63 [0.48 – 0.82]	<0.001	0.79 [0.57 – 1.10]	NS
Other	0.56 [0.41 – 0.76]	<0.001	1.13 [0.71 – 1.81]	NS
Unknown	0.81 [0.52 – 1.26]	NS	1.00 [0.61 – 1.65]	NS
Hispanic Ethnicity	0.56 [0.42 – 0.74]	<0.001	0.85 [0.54 – 1.33]	NS
Pre-existing neurological disorders	1.68 [1.34 – 2.11]	<0.001	1.22 [0.94 – 1.58]	NS
Neurologic Manifestations				
^b All Neuro +	1.77 [1.32 – 2.39]	<0.001	1.79 [1.17 – 2.75]	0.006
^c Signs/Syndromes +	6.41 [4.82 – 8.50]	<0.001	6.19 [4.24 – 9.02]	<0.001
Self-Reported Neurological Symptoms				
Headache	0.26 [0.20 – 0.34]	<0.001	0.31 [0.23 – 0.42]	<0.001
Anosmia/Aguesia	0.68 [0.53 – 0.87]	0.002	0.84 [0.63 – 1.11]	NS
Syncope	0.29 [0.14 – 0.63]	<0.001	0.13 [0.05 – 0.36]	<0.001
Neurologic Signs/Syndromes				
Acute Encephalopathy	5.27 [4.06 – 6.82]	<0.001	5.63 [3.92 – 8.08]	<0.001
Stroke (all types)	1.98 [1.21 – 3.23]	0.001	0.86 [0.44 – 1.69]	NS
Coma	3.76 [2.99 – 4.73]	<0.001	6.35 [4.59 – 8.77]	<0.001
Seizure/Status Epilepticus	1.41 [0.58 – 3.43]	NS	0.82 [0.23 – 2.95]	NS
Meningitis/ Encephalitis	6.33 [0.89 – 45.1]	NS	7.75 [0.82 – 73.0]	NS
Myelopathy	1.26 [0.15 – 10.8]	NS	0.85 [0.54 – 1.32]	NS
^d Plegia/Paralysis	2.68 [1.09 – 6.59]	0.046	3.07 [0.81 – 11.7]	NS
^d Aphasia	2.71 [0.93 – 7.93]	NS	3.84 [0.67 – 21.9]	NS
^d Sensory Abnormalities	3.47 [1.16 – 10.3]	0.040	1.77 [0.15 – 21.5]	NS
^d Abnormal Brainstem Reflexes	19.9 [6.99 – 56.9]	<0.001	23.6 [2.94 – 190]	0.002
^d Movement Abnormalities	1.23 [0.42 – 3.64]	NS	1.21 [0.37 – 3.98]	NS
^d Abnormal Tone	2.73 [0.93 – 7.98]	NS	3.89 [1.06 – 14.3]	0.049

Abbreviation: OR: Odds Ratio; aOR: Adjusted Odds Ratio; NS: p>0.05

^aAdjusted models include covariates study center, age, age² (except when estimating the OR for age), sex, race, and ethnicity.

^bAll Neuro +: Presence of any self-reported neurological symptoms or clinically verified neurological signs or syndromes.

^cSigns/Syndromes +: Clinically verified neurological signs or syndromes present.

^dSupplemental data elements capture additional clinical features and baseline risk factors. Reporting of supplemental data elements is optional with some but not all sites reporting these data.

eFigure. Prevalence of Clinically Captured Neurological Syndromes or Signs in Study Cohorts

